

a portion having a machined surface exposed to the process chemistry used in the semiconductor fabrication apparatus, wherein the portion of the gas distribution plate has substantially no micro-defects about 50 micrometers or greater.

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2. (Three times Amended) A gas distribution plate as recited in claim 1 wherein [the] micro-defects within the plurality of drilled holes are substantially eliminated before implementation within the semiconductor fabrication apparatus.

3. (Once Amended) A gas distribution plate as recited in claim 1 wherein the micro-defects are substantially eliminated by heating the portion.

4. A gas distribution plate as recited in claim 1 wherein the portion includes at least one surface of the distribution plate which is exposed to the internal regions of the semiconductor processing chamber.

5. (Twice Amended) A gas distribution plate as recited in claim 1 wherein, during its operation, the gas distribution plate produces less than 0.1 particle defects per square centimeter for a wafer processed in the semiconductor fabrication apparatus over the entire operating life of the gas distribution plate.

6. A gas distribution plate as recited in claim 1 wherein the gas distribution plate does not substantially diminish wafer yield over the entire operating life of the gas distribution plate.

7. (Once Amended) A gas distribution plate as recited in claim 6 further comprising at least one distribution channel, wherein the at least one distribution channel is machined to a back face of the gas distribution plate.

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8. (Once Amended) The gas distribution plate as recited in claim 1 wherein the gas distribution plate includes a material whose products from reacting with the process chemistry used in the semiconductor fabrication apparatus are gaseous.

9. The gas distribution plate as recited in claim 1 wherein the gas distribution plate includes a ceramic material.

10. A gas distribution plate as recited in claim 9 wherein the plate includes one of  $\text{Si}_3\text{N}_4$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$  and  $\text{SiC}$ .

11. A gas distribution plate as recited in claim 9 wherein the ceramic material is included in a portion of the gas distribution plate which faces the semiconductor processing chamber.

12. (Twice Amended) A plasma-based fabrication apparatus, comprising:

a plasma chamber that receives process gases and forms a plasma therefrom;  
and

a gas distribution plate including a plurality of holes that supply the process gases into said plasma chamber, a portion of said gas distribution plate having a machined surface and being exposed to the process chemistry used in said plasma chamber, wherein the portion of the gas distribution plate has substantially no micro-defects about 50 micrometers or greater and wherein said gas distribution plate is pretreated by heating at a controlled temperature between about 1500 degrees Celsius to 1600 degrees Celsius for a prolonged time.

13. (Once Amended) A plasma-based fabrication apparatus as recited in claim 12 wherein said plasma-based fabrication apparatus fabricates semiconductor devices.

14. (Once Amended) A plasma-based fabrication apparatus as recited in claim 12 wherein said plasma-based fabrication apparatus is a semiconductor etch machine.

18. (Once Amended) A plasma-based fabrication apparatus as recited in claim 12 wherein the prolonged time is from about 5 to 10 hours.

40 19. (New) A plasma-based fabrication apparatus, as recited in claim 12, wherein the plurality of holes are a plurality of drilled holes, wherein the pretreating by heating is done after formation of the plurality of drilled holes.

41 20. (New) The plasma based fabrication apparatus, as recited in claim <sup>40</sup>19, wherein the pretreating by heating eliminates micro-defects on surfaces of the plurality of drilled holes.

42 21. (New) A gas distribution plate as recited in claim 1 wherein micro-defects on surfaces of the plurality of drilled holes are substantially eliminated by heating the portion.